Standards of Public Land Health
Evaluation of 64019 DEEP WELL RANCH Allotment
[12/05/2006]

The Roswell Field Office conducted Rangeland Health Assessments at 4 study sites within Deep Well Ranch, allotment #64019 on March 20 and 21, 2007. These assessments evaluated Soil/Site Stability, Hydrologic Function and Biotic Integrity indicators within the vicinity of each study site. Existing monitoring data was incorporated into and in support of these field assessments. A summary of each assessment is attached and shown in the following table.

Study Area or Assessment Area	UPLAND			BIOTIC			RIPARIAN		
	Meets	Monitor an Indicator	Does Not Meet	Meets	Monitor an Indicator	Does Not Meet	Meets	Monitor an Indicator	Does Not Meet
64019-EAST-F040	X			X			N/A		
64019-SOUTH 1-F042	X			X			N/A		
64019-SOUTH 2-F043	X			X			N/A		
64019-WEST-F041 (*)	X			X			N/A		

Twenty-two (22) indicators for Rangeland Health were evaluated for public land on Deep Well Ranch, allotment #64019. Ten of these assessed soil site stability, 11 hydrologic function and 13 biotic integrity. These qualitative assessments in conjunction with quantitative information gathered from previous data collected on 4 trend plot locations within this allotment were utilized to make rangeland health determinations. Quantitaive evaluations are performed by the Roswell Field Office, which include some or all of the following: ground and vegetative cover and composition, production, frequency and ecological condition. These collections which were initiated in the late 1970's/early 1980's, are scheduled and conducted approximately every 5 years.

This allotment contains four study sites. Two are on loamy sites and two are on very shallow sites. All sites were visited on March 20 and 21, 2007. Cattle were on the allotment, but use at the sites was not evident.

All sites show high Soil/Site Stability with very little active erosion. Active erosion is associated with roads, travel ways, cattle trails, stock tanks and livestock concentration areas. Hydrologic function was high on all sites.

The biotic integrity has shifted somewhat and more noticeably on loamy sites. All sites show a shift in composition from what was expected on the ESDs. Cholla was encroaching but is dying

on all sites. Snakeweed appears to be declining throughout the allotment. Flat, loamy sites are dominated by tobosa grass with a substantial amount of burrograss. Upland sites are a mix of grasses. Three-awns, and tridens are often heavy in composition. Gramas remain a significant part of the composition but are generally less in the composition than expected for the sites. False buffalo grass is gaining a foothold in some upland areas. Shrubs are present in the upland sites. Shrub encroachment is slight on the uplands. One site (East F040) had good composition.

Production throughout the allotment was higher than expected, likely due to the good precipitation year in 2006.

The keystone wildlife species for the allotment is pronghorn. Habitat for pronghorn was satisfactory throughout the allotment. Monocultures of tobosa grass in the loamy areas reduce the quality of the habitat.

It is the professional opinion of the Assessment Team, public land within allotment #64019, Deep Well Ranch meets Upland and Biotic Standards. There are no Riparian issues present therefore this standard was not addressed. See site notes, comments and recommendations for further information regarding this assessment.

The (*) indicates that the assessment had one or more indicator(s) rated moderate/extreme or extreme. These indicators are:

- Functional/Structural Groups

These indicators by themselves are not enough to rate the site as not meeting a standard but may warrant future monitoring.

Recommendations: All of the loamy areas within the allotment are dominated by tobosa grass with a noticeable reduction in other more desirable grasses. Prescribed burning or other disturbance (i.e. herd effect) followed by appropriate rest may help improve vegetative diversity.

Active erosion areas are associated with features such as roads and stock tanks. Roads passing through the allotment have resulted in accelerated runoff into local drainages. There is some active head cutting occurring. All the roads within this allotment should be evaluated for this condition and corrective measures taken.

RFOs Upland and Biotic Standard Assessment Summary Worksheet			
SITE 64019-EAST-F040			
Legal Land Desc	SWSE 6 0070S 0220E Meridian 23	Acreage	2757
Ecosite	070DY158NM VERY SHALLOW CP-4	Photo Taken	Y
Watershed	13060005040 FIFTEEN		

	MILE		
Observers	JACKSON, BRITTON	Observation Date	03/20/2007
County Soil Survey	NM644 CHAVES NORTH	Soil Var/Taxad	
Soil Map Unit	EaC	Soil Taxon Name	ECTOR
Texture Class	NM644 CBV-L	Soil Phase	ECTOR
Texture Modifier	NM644 VERY COBBLY LOAM		
Observed Avg Annual Precipitation		Observed Avg Growing Season Precipitation	
NOAA Annual Precipitation	10.55	NOAA Growing Season Precipitation	8.18
NOAA Avg Annual Precipitation	9.73	NOAA Avg Growing Season Precipitation	8.01
Disturbances and Animal Use:	No current livestock use. No cattle seen in or near the site.		

Part 2. Attributes and Indicators

		Departure from Ecological Site Description/Ecological Reference Areas				
Attribute	Indicators	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S H	Rills					X
Comments:						
S H	Water Flow Patterns					X
Comments:	Lots of surface rock.					
S H	Pedestals and/or Terracettes				X	
Comments:	Tending to none to slight. Site is stable. There are no terracettes. Pedestals are minimal.					
S H	Bare Ground					X
Comments:	Less than expected for the site.					
S H	Gullies				X	
Comments:	There are no gullies on site, but there are a few visible nearby.					
S	Wind-scoured, Blowouts, and/or Deposition Areas					X
Comments:						
H	Litter Movement					X
Comments:						

S H B	Soil Surface Resistance to Erosion					X
Comments:	There is a lot of surface cobble and gravel. Biotic and physical crusts are common.					
S H B	Soil Surface Loss or Degradation					X
Comments:	Trending toward Slight to Moderate. Surface soil loss is minimal.					
H	Plant Community Composition and Distribution Relative to Infiltration and Runoff					X
Comments:						
S H B	Compaction Layer					X
Comments:						
B	Functional/Structural Groups				X	
Comments:	Shrubs (bear grass) appear to be increasing.					
B	Plant Mortality/Decadence					X
Comments:						
H B	Litter Amount					X
Comments:	Exceeds expected.					
B	Annual Production					X
Comments:	Exceeds average expected.					
B	Invasive Plants					X
Comments:	There are very few cholla, which are widely dispersed.					
B	Reproductive Capability of Perennial Plants					X
Comments:						
S	Physical/Chemical/Biological Crusts					X
Comments:	Crusts are common in the plant / rock interspaces.					
B	Wildlife Habitat					X
Comments:	This site has good vegetative diversity and provides good habitat for pronghorn antelope.					
B	Wildlife Populations					X
Comments:						
B	Special Status Species Habitat					X
Comments:						
B	Special Status Species Populations					X
Comments:						

Part 3. Summary

A. Indicator Summary - Each of the indicators are associated with one or more of the attributes below. An indicator is placed in a category (columns) above and summed for each of the Standard Attributes.

Standard Attribute		Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S	Soil	0	0	0	2	8
H	Hydrologic	0	0	0	2	9
B	Biotic	0	0	0	1	12

B. Attribute Summary. In this table, the Extreme and Extreme to Moderate columns in the table above are merged for the *Does not Meet* column, Moderate becomes *May Need More Info*, and Slight to Moderate and None to Slight merge to form the *Meets* columns. Values from the table are summarized below. Space is provided for rationale of the determination. This space should most certainly be used when the determination by the ID team conflicts with the summarized values. Provide the sources of information that lead to the determination. X out the appropriate box for each attribute to denote final agreed upon determination by the ID team.

Attribute	Rationale	Does Not Meet	May Need More Info	Meets
Soil	Site is well armored with rock. Biotic crusts are prevalent. Bare ground is substantially less than expected in ESD. Good vegetative cover.	0	0	10
Hydrologic		0	0	11
Biotic	Biotic crusts are prevalent. Vegetative diversity is good. Annual production exceeds average for the site. Reproductive capability is good. Amount of litter is good. Wildlife habitat is good.	0	0	13

Site Notes: Species noted on site: Eragrostis spp.; Nolina spp. ; Bogr2; Boer; Musq; ARIST; Yucca; OPUNT (cholla); Gusa; ERIOG; Tridens spp.; OPUNT (prickly pear); Bocu

The site is stable and productive. Current year's production exceeds the expected average in the ESD. Litter amounts exceed the average expected in the ESD.

Bear grass may be increasing on the site. Vegetative diversity is relatively good.

RFOs Upland and Biotic Standard Assessment Summary Worksheet

SITE 64019-SOUTH 1-F042

Legal Land Desc	SENE 27 0070S 0210E Meridian 23	Acreage	4293

Ecosite	070DY158NM VERY SHALLOW CP-4	Photo Taken	Y
Watershed	13060005070 SALT		
Observers	JACKSON; BRITTON	Observation Date	03/21/2007
County Soil Survey	NM644 CHAVES NORTH	Soil Var/Taxad	
Soil Map Unit	EaC	Soil Taxon Name	ECTOR
Texture Class	NM644 CBV-L	Soil Phase	ECTOR
Texture Modifier	NM644 VERY COBBLY LOAM		
Observed Avg Annual Precipitation		Observed Avg Growing Season Precipitation	
NOAA Annual Precipitation	10.55	NOAA Growing Season Precipitation	8.18
NOAA Avg Annual Precipitation	9.73	NOAA Avg Growing Season Precipitation	8.01
Disturbances and Animal Use:	No livestock use was evident on the site. A road passes through the site.		

Part 2. Attributes and Indicators

		Departure from Ecological Site Description/Ecological Reference Areas				
Attribute	Indicators	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S H	Rills					X
Comments:	None observed					
S H	Water Flow Patterns				X	
Comments:	Some slight evidence of soil erosion. Flow patterns are stable and short.					
S H	Pedestals and/or Terracettes				X	
Comments:	Active pedestalling is rare. There is some evidence of past pedestalling within flow patterns. No terracettes.					
S H	Bare Ground					X
Comments:	Much less than expected for the site. There is abundant surface rock.					
S H	Gullies					X
Comments:	No gullies observed.					
S	Wind-scoured, Blowouts, and/or Deposition Areas					X
Comments:						

H	Litter Movement					X
Comments:						
S H B	Soil Surface Resistance to Erosion					X
Comments:						
S H B	Soil Surface Loss or Degradation				X	
Comments:	There has been some soil loss as evidenced by minor pedestalling. This is borderline with none to slight.					
H	Plant Community Composition and Distribution Relative to Infiltration and Runoff					X
Comments:						
S H B	Compaction Layer					X
Comments:						
B	Functional/Structural Groups					X
Comments:	Good species composition. Shrubs, forbs and grasses appear to be in balance.					
B	Plant Mortality/Decadence					X
Comments:						
H B	Litter Amount					X
Comments:	Litter is above what is expected for the site.					
B	Annual Production					X
Comments:	Exceeds 80% of potential production.					
B	Invasive Plants					X
Comments:	Rarely present on the site.					
B	Reproductive Capability of Perennial Plants					X
Comments:						
S	Physical/Chemical/Biological Crusts					X
Comments:						
B	Wildlife Habitat					X
Comments:	Good vegetative diversity. Good pronghorn habitat.					
B	Wildlife Populations					X
Comments:						
B	Special Status Species Habitat					X
Comments:						

B	Special Status Species Populations					X
Comments:						

Part 3. Summary

A. Indicator Summary - Each of the indicators are associated with one or more of the attributes below. An indicator is placed in a category (columns) above and summed for each of the Standard Attributes.

Standard Attribute		Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S	Soil	0	0	0	3	7
H	Hydrologic	0	0	0	3	8
B	Biotic	0	0	0	1	12

B. Attribute Summary. In this table, the Extreme and Extreme to Moderate columns in the table above are merged for the *Does not Meet* column, Moderate becomes *May Need More Info*, and Slight to Moderate and None to Slight merge to form the *Meets* columns. Values from the table are summarized below. Space is provided for rationale of the determination. This space should most certainly be used when the determination by the ID team conflicts with the summarized values. Provide the sources of information that lead to the determination. X out the appropriate box for each attribute to denote final agreed upon determination by the ID team.

Attribute	Rationale	Does Not Meet	May Need More Info	Meets
Soil	Soils are heavily armored with rock and are well vegetated. There is some evidence of soil loss, but it is minimal. There are no rills or gullies.	0	0	10
Hydrologic		0	0	11
Biotic	The site has good vegetative diversity and appears to be very productive for the site.	0	0	13

Site Notes: Plant species encountered included: Boer; ARIST; Stne; Muto; Trpu; Bogr2; Gusa2; MIACB; Dafo; Bocu; ERIOG; Antennaria spp. (pussytoes); NOLIN.

RFOs Upland and Biotic Standard Assessment Summary Worksheet

SITE 64019-SOUTH 2-F043

Legal Land Desc	NWSW 24 0070S 0210E Meridian 23	Acreage	2863
Ecosite	070BY052NM LOAMY CP-2	Photo Taken	Y
Watershed	13060005070 SALT		

Observers	JACKSON; BRITTON	Observation Date	03/21/2007
County Soil Survey	NM644 CHAVES NORTH	Soil Var/Taxad	
Soil Map Unit	RDB	Soil Taxon Name	REAGAN
Texture Class	NM644 SIL	Soil Phase	REAGAN-CONGER
Texture Modifier	NM644 SILT LOAM		
Observed Avg Annual Precipitation		Observed Avg Growing Season Precipitation	
NOAA Annual Precipitation	10.55	NOAA Growing Season Precipitation	8.18
NOAA Avg Annual Precipitation	9.73	NOAA Avg Growing Season Precipitation	8.01
Disturbances and Animal Use:	No livestock use evident on the site. A road passes through the site.		

Part 2. Attributes and Indicators

		Departure from Ecological Site Description/Ecological Reference Areas				
Attribute	Indicators	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S H	Rills					X
Comments:						
S H	Water Flow Patterns					X
Comments:						
S H	Pedestals and/or Terracettes					X
Comments:	No terracettes. Pedestals are uncommon and appear to be restricted to trailing areas.					
S H	Bare Ground					X
Comments:	Excellent ground cover.					
S H	Gullies					X
Comments:	None observed.					
S	Wind-scoured, Blowouts, and/or Deposition Areas					X
Comments:						
H	Litter Movement					X
Comments:	Litter is distributed uniformly throughout the site.					
S H B	Soil Surface Resistance to					X

	Erosion					
Comments:						
S H B	Soil Surface Loss or Degradation					X
Comments:	Surface aggregate stability is high.					
H	Plant Community Composition and Distribution Relative to Infiltration and Runoff					X
Comments:						
S H B	Compaction Layer					X
Comments:						
B	Functional/Structural Groups				X	
Comments:	This is trending toward moderate. Cholla appears to be increasing on the site, but is also showing signs of mortality. The grass community is dominated by Tobosa grass.					
B	Plant Mortality/Decadence					X
Comments:	Cholla is being affected by a fungal infection.					
H B	Litter Amount					X
Comments:						
B	Annual Production					X
Comments:	Exceeds 80% of potential.					
B	Invasive Plants			X		
Comments:	Cholla has invaded the site but may be declining due a fungal infection. This category is borderline with slight to moderate.					
B	Reproductive Capability of Perennial Plants					X
Comments:						
S	Physical/Chemical/Biological Crusts				X	
Comments:	Evident throughout the site, but continuity is broken.					
B	Wildlife Habitat					X
Comments:	The site meets the criterion for none to slight, but the site could be better with a more diverse vegetative community.					
B	Wildlife Populations				X	
Comments:						
B	Special Status Species Habitat					X
Comments:						
B	Special Status Species					X

	Populations					
Comments:						

Part 3. Summary

A. Indicator Summary - Each of the indicators are associated with one or more of the attributes below. An indicator is placed in a category (columns) above and summed for each of the Standard Attributes.

Standard Attribute		Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S	Soil	0	0	0	1	9
H	Hydrologic	0	0	0	0	11
B	Biotic	0	0	1	2	10

B. Attribute Summary. In this table, the Extreme and Extreme to Moderate columns in the table above are merged for the *Does not Meet* column, Moderate becomes *May Need More Info*, and Slight to Moderate and None to Slight merge to form the *Meets* columns. Values from the table are summarized below. Space is provided for rationale of the determination. This space should most certainly be used when the determination by the ID team conflicts with the summarized values. Provide the sources of information that lead to the determination. X out the appropriate box for each attribute to denote final agreed upon determination by the ID team.

Attribute	Rationale	Does Not Meet	May Need More Info	Meets
Soil	There is little to no evidence of soil movement or loss. Vegetative ground cover is good.	0	0	10
Hydrologic		0	0	11
Biotic	Production and litter cover are good. Species diversity is deficient. The site is dominated by Tobosa grass. Cholla has invaded the site to a small degree.	0	1	12

Site Notes: As with most of the Loamy sites, Tobosa grass dominates the vegetative community. The site is almost flat and shows little sign of soil loss or movement.

Plant species encountered on the site include: HIMU; SCBR2; ERIGE (daisy); dandelion ??; OPUNT (cholla); BOER; ASTRA (locoweed); Antennaria spp (pussytoes); OPUNT (pricklypear); dwarf desert holly;

RFOs Upland and Biotic Standard Assessment Summary Worksheet

SITE 64019-WEST-F041

Legal Land Desc	NESE 3 0070S 0210E Meridian 23	Acreage	3596
Ecosite	070CY109NM	Photo Taken	Y

	LOAMY CP-3		
Watershed	13060005040 FIFTEEN MILE		
Observers	JACKSON; BRITTON	Observation Date	03/20/2007
County Soil Survey	NM644 CHAVES NORTH	Soil Var/Taxad	
Soil Map Unit	TAB	Soil Taxon Name	THREADGILL
Texture Class	NM644 SIL	Soil Phase	THREADGILL-ASPARAS
Texture Modifier	NM644 SILT LOAM		
Observed Avg Annual Precipitation		Observed Avg Growing Season Precipitation	
NOAA Annual Precipitation	10.55	NOAA Growing Season Precipitation	8.18
NOAA Avg Annual Precipitation	9.73	NOAA Avg Growing Season Precipitation	8.01
Disturbances and Animal Use:	No current livestock use, however, cattle were in the area at the time of the visit. A road passes through the site.		

Part 2. Attributes and Indicators

		Departure from Ecological Site Description/Ecological Reference Areas				
Attribute	Indicators	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S H	Rills					X
Comments:	No rills observed.					
S H	Water Flow Patterns					X
Comments:	Site is nearly flat. No water movement is evident.					
S H	Pedestals and/or Terracettes					X
Comments:	Site is a deposition area.					
S H	Bare Ground					X
Comments:	Much less than expected in the ESD.					
S H	Gullies				X	
Comments:	Borderline with none to slight. Gullies are associated with old road and cow trail that pass through the site.					
S	Wind-scoured, Blowouts, and/or Deposition Areas					X

Comments:						
H	Litter Movement				X	
Comments:	Wind displacement. Burro grass seed heads from off site are abundant.					
S H B	Soil Surface Resistance to Erosion					X
Comments:	Trending toward slight to moderate. Physical and biotic crusts dominate interspaces. Soil aggregate stability was high.					
S H B	Soil Surface Loss or Degradation					X
Comments:	Site is more of a deposition area.					
H	Plant Community Composition and Distribution Relative to Infiltration and Runoff				X	
Comments:	Plant composition is poor, but runoff and infiltration are normal.					
S H B	Compaction Layer					X
Comments:						
B	Functional/Structural Groups		X			
Comments:	The number of species within the grass group are significantly reduced. This site is almost a mono culture of tobosa grass.					
B	Plant Mortality/Decadence					X
Comments:	Little to no decadence in the herbaceous community. Cholla appear to be dying.					
H B	Litter Amount					X
Comments:	Greater than expected for the site.					
B	Annual Production					X
Comments:	Exceeds 80% of potential.					
B	Invasive Plants			X		
Comments:	Cholla has invaded but appears to be dying out. Therefore, this is appears to be moving toward slight to moderate. Cockleburs are present in and around the active gully near the road.					
B	Reproductive Capability of Perennial Plants				X	
Comments:	The existence of the tobosa monoculture suggests that more desirable plants are not reproducing adequately.					
S	Physical/Chemical/Biological Crusts					X
Comments:						
B	Wildlife Habitat				X	
Comments:	This monoculture of tobosa grass does not contribute to satisfactory pronghorn habitat.					

B	Wildlife Populations				X	
Comments:						
B	Special Status Species Habitat					X
Comments:						
B	Special Status Species Populations					X
Comments:						

Part 3. Summary

A. Indicator Summary - Each of the indicators are associated with one or more of the attributes below. An indicator is placed in a category (columns) above and summed for each of the Standard Attributes.

Standard Attribute		Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S	Soil	0	0	0	1	9
H	Hydrologic	0	0	0	3	8
B	Biotic	0	1	1	3	8

B. Attribute Summary. In this table, the Extreme and Extreme to Moderate columns in the table above are merged for the *Does not Meet* column, Moderate becomes *May Need More Info*, and Slight to Moderate and None to Slight merge to form the *Meets* columns. Values from the table are summarized below. Space is provided for rationale of the determination. This space should most certainly be used when the determination by the ID team conflicts with the summarized values. Provide the sources of information that lead to the determination. X out the appropriate box for each attribute to denote final agreed upon determination by the ID team.

Attribute	Rationale	Does Not Meet	May Need More Info	Meets
Soil	Soils are generally stable. The area is relatively flat and may be more of a deposition area. One area of active gully formation exists north of the road and is exacerbated by runoff from the road.	0	0	10
Hydrologic		0	0	11
Biotic	Vegetative diversity is significantly reduced based on a Loamy CP3 site. Most other biotic indicators are "none to slight" with the exception of invasives. Cholla have invaded the site, but appear to be dying.	1	1	11

Site Notes: This is a highly productive site. Soils are stable; hydrologic function is good. Vegeative diversity is greatly reduced from what is expected for the site. The ecosite description is for a Loamy CP3. This site fits closer to a Loamy CP4 or CP2, in which case, Tobosa grass

would be expected to be a dominant grass. Species encountered: Tobosa grass; burro grass; cholla; cocklebur;

Determination of Public Land (Rangeland) Health for 64019 DEEP WELL RANCH

The Record of Decision (ROD) for the New Mexico Standards for Public Land Health and Guidelines for Livestock Grazing Management (dated January 2001) adopted three Standards for Public Land Health. These are (1) Upland Sites Standard, (2) Biotic Communities, Including Native, Threatened, Endangered, and Special Status Species Standard and (3) Riparian Sites Standard.

The ROD also established a process for the BLM Field Offices for implementation. Through a public participation process, the Roswell Field Office developed and adopted indicators to use in conjunction with existing monitoring data to assess these standards.

Field assessment worksheets and other available data that evaluate the local indicators were completed for this allotment. Based on these assessments, it is my determination that public land within Deep Well Ranch, allotment #64019, meets the (1) Upland Sites standard and (2) Biotic Communities, including Native, Threatened, Endangered, and Special Status Species standard. There are no public land Riparian areas on this allotment, therefore this standard was not addressed.

/s/ EDDIE BATESON	08/24/2007
Assistant Field Manager	Date